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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,329	09/16/2005	Satoshi Hiranuma	1575.0155PUS1	1359
2292 7590 12/13/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER TRAN, DIEM T	
			ART UNIT 3748	PAPER NUMBER
			NOTIFICATION DATE 12/13/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	10/531,329		HIRANUMA ET AL.	
	Examiner		Art Unit	
	Diem Tran		3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on RCE filed on 10/26/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-5 is/are allowed.
- 6) ☒ Claim(s) 1, 6-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***DETAILED ACTION***

This office action is in response to the Request for Continued Examination filed on 10/26/07. In this amendment, claim 1 has been amended. Overall, claims 1-8 are pending in this application.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikami et al. (US Patent 6,655,133) in view of Murachi et al. (US Patent 5,746,989).***

Regarding claim 1, Mikami discloses an exhaust gas purifying system for an internal combustion engine, comprising:

an exhaust-after-treatment device disposed in an exhaust system of the internal combustion engine, and including a particulate filter (70) configured to collect particulates from exhaust gas, and an NO<sub>2</sub> generating unit inside the particulate filter (see col. 14, lines 38-46);

a burnt particulate amount calculating unit configured to calculate an amount of burnt particulates on the basis of a temperature of the particulate filter (see Figure 24, col. 16, lines 7-10); and a particulate accumulation amount calculating unit configured to calculate an amount of accumulated particulates on the basis of the calculated amount of discharged particulates and the calculated amount of burnt particulates (see col. 18, lines 35-41); however, fails to disclose

Art Unit: 3748

calculating a discharged particulate amount from a map on the basis of an excess air ratio.

Murachi teaches that a discharged particulate amount from the engine is calculated based on an amount of fuel burned in the engine, wherein an excess air ratio is derived from the fuel amount burned in the engine (see col. 11, lines 32-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Murachi in the Mikami system, since the use thereof would have provided an accurate means to determine an amount of discharged particulate matter in the exhaust gas.

Regarding claim 8, Mikami discloses all the claimed limitations as discussed in claim 1 above, however, fails to specifically disclose that the excess air ratio is calculated by a formula:

$$\lambda = Q_a / (Q_f \times 14.7)$$

It is well known for one having ordinary skill in the art to realize that the excess air ratio is calculated by a formula  $\lambda = Q_a / (Q_f \times 14.7)$  where,  $\lambda$  is the excess air ratio,  $Q_a$  is the intake air amount, and  $Q_f$  is the fuel injection amount. Therefore, such disclosure by Mikami is notoriously well known in the art so as to be proper for official notice.

***Claims 6, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikami et al. (US Patent 6,655,133) in view of Murachi et al. as applied to claim 1 above, and further in view of Schaller (US Patent 7,137,248).***

Regarding claim 6, the modified Mikami discloses all the claimed limitations as discussed in claim 1 above, however, fails to specifically disclose calculating an amount of burnt particulates on the basis of a fuel burning velocity coefficient, wherein the fuel burning velocity

coefficient is obtained from a map based on the temperature of the particulate filter. Schaller teaches that calculating an amount of burnt particulates on the basis of a fuel burning velocity coefficient, wherein the fuel burning velocity coefficient is obtained based on the temperature of the particulate filter (see Figure 2, col. 5, lines 8+).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Schaller in the modified Mikami system, since the use thereof would have been conventional in the art to accurately determine a rate of soot combustion in the filter.

#### ***Allowable Subject Matter***

Claims 2-5 are allowed.

#### ***Conclusion***

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:00 a.m.- 6:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for

Art Unit: 3748

unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).



Diem Tran  
Patent Examiner



THOMAS DENION  
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TECHNOLOGY CENTER 3700